

### DISCUSSION OF THE CLAIMS

Claims 1-8 and 10-23 are active in the present application. Independent Claim 1 is amended herein to include one or more features from original Claim 9. Claim 9 is canceled. Claims 15-23 are new claims. Support for new Claim 15 is found in the paragraph bridging pages 2 and 3. Support for new Claim 17 is found in the paragraph bridging pages 8 and 9. Support for new Claim 16 is found on page 11, lines 3-9. Support for new Claims 18-20 is found on page 14. Support for new Claim 21 is found on page 41, lines 10-17. Support for new Claims 22 and 23 is found in Tables 1 and 2 (note that the Ip for the host material is found on page 55 under Table 1).

No new matter is added.

REMARKS

Independent Claim 1 is drawn to an electroluminescent device in which the difference in the ionization potential of a host material of an emitting layer and a electron-transporting material of an electron-transporting layer is greater than -0.2 eV and less than 0.4 eV (i.e.,  $-0.2 \text{ eV} < \Delta I_p < 0.4 \text{ eV}$ ). New dependent Claims 22 and 23 recite a difference in ionization potential between the host material and the electron-transporting material of  $-0.1 \text{ eV} < \Delta I_p < 0.4 \text{ eV}$  and  $0.0 \text{ eV} < \Delta I_p < 0.4 \text{ eV}$ , respectively.

In the Office Action of November 10, 2009, the Office asserts that Tsuboyama (JP 2002-343572) and/or Ikeda (JP 2004-002297) disclose or suggest an organic electroluminescent device having the difference in ionization potential such as that now recited in Claim 1. In particular, the Office asserts that the Ikeda reference discloses an electron-transporting material having an ionization potential of 5.7 eV and a host material having an ionization potential of 5.9 eV. Based upon this information, the Office asserts that the difference in ionization potentials of the electron-transporting and host materials disclosed and/or suggested by Tsuboyama in view of Ikeda is within the  $-0.2 \text{ eV} < \Delta I_p < 0.4 \text{ eV}$  range now recited in Claim 1.

Applicants submit the Office's assertion in this respect is not correct. In fact, the Office's calculation of the difference in ionization potential proves that the cited art does not disclose a combination of host and electron-transporting materials that meet the  $\Delta I_p$  properties recited in present Claim 1. For example, on page 6, lines 3-5 of the November 10, 2009 Office Action, the Office calculates a difference in ionization potential between host and electron-transporting materials of "-0.2 eV". *The  $\Delta I_p$  value now recited in Claim 1 must be greater than -0.2 eV.* The  $\Delta I_p$  value calculated by the Office is not encompassed by the range now recited in Claim 1.

Applicants further submit that the Office failed to set forth a *prima facie* case of obviousness at least with respect to the subject matter of Claim 9 in the November 10, 2009 Office Action because the Office failed to show that the  $\Delta I_p$  requirement of the claims is disclosed or suggested in the cited art.

Irrespective of the Office's failure to set forth a *prima facie* case of obviousness, Applicants submit that the Office's calculation is factually incorrect. Applicants submit that it is readily recognized by those of ordinary skill in the art that determining the ionization potential of a material requires specifying the measurement method and/or measurement instrument used. In order to compare the ionization potentials of two different materials, the ionization potentials of both materials must be measured with the same instrument and/or under the same conditions. On page 5 of the Office Action, the Office uses a  $I_p$  value of 5.7 eV for the electron-transporting material allegedly disclosed in Ikeda. The Office calculates the difference in ionization potentials by using a value of 5.9 eV allegedly disclosed for the host material CBP in Hamada (U.S. 6,921,590).

Importantly, the Office failed to show that the ionization potentials of the host and electron-transporting materials disclosed in Ikeda and Hamada are determined using the same instruments and/or measurement conditions. In fact, Hamada is silent with respect to the method by which the ionization potential of CBP is measured.

Applicants submit factual evidence showing that the ionization potential of CBP is not 5.7 eV when measured using the same measuring conditions as used for determining the ionization potential of the electron-transporting material. Because different measurement instrument and/or conditions were used, the Office's calculation of the  $\Delta I_p$  value is not correct .

The English translation of "Databook on Work Functions of Organic Thin Films" is attached herewith to prove that the difference in ionization potential of the host and electron -

layers of the cited art do not meet the  $\Delta I_p$  requirement of the present claims. The English translation attached herewith provides an ionization potential of 6.1 eV for CBP. The ionization potential of electron transport material (i.e., ETM No. 2) is taken from the present application as 5.7 eV. The measurement conditions and measurement instrument used to determine the ionization potential values of the electron transport material of the present specification and the CPB compound of the English translation "Databook ...." are the same; namely, both measurements are obtained using an "AC-1" Riken Keiki Company Instrument (see paragraph [0054] on page 45-46 of the present application and the first page of the English translation of "Databook ...").

Using ionization potentials measured on the same instrument, the  $\Delta I_p$  value is easily calculated (i.e., 5.7 eV - 6.1 eV = -0.4 eV).

Thus, the actual difference in ionization potentials of the host and electron transport materials of the cited art is substantially less than -0.2 eV asserted by the Office.

Applicants submit the evidence of record contradicts the Office's assertions of obviousness with respect to the  $\Delta I_p$  range recited in present Claim 1 and the rejection should properly be withdrawn.

For the reasons above in detail, Applicants requests the withdrawal of the rejection and the allowance of all now pending claims.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, L.L.P.  
Norman F. Oblon



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Stefan U. Koschmieder, Ph.D.  
Attorney of Record  
Registration No. 50,238

Customer Number  
**22850**